NATIONAL BUREAU OF STANDARDS REPORT

8649

THE EFFECT OF SURFACE REACTIONS ON FATIGUE FAILURE

Status Report
September 1, 1964 to February 28, 1965

By

T. R. Shives
and
J. A. Bennett

To

National Aeronautics and Space Administration
Order No. R-14, Amendment No. 4

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS

THE NATIONAL BUREAU OF STANDARDS

The National Bureau of Standards is a principal focal point in the Federal Government for assuring maximum application of the physical and engineering sciences to the advancement of technology in industry and commerce. Its responsibilities include development and maintenance of the national standards of measurement, and the provisions of means for making measurements consistent with those standards; determination of physical constants and properties of materials; development of methods for testing materials, mechanisms, and structures, and making such tests as may be necessary, particularly for government agencies; cooperation in the establishment of standard practices for incorporation in codes and specifications; advisory service to government agencies on scientific and technical problems; invention and development of devices to serve special needs of the Government; assistance to industry, business, and consumers in the development and acceptance of commercial standards and simplified trade practice recommendations; administration of programs in cooperation with United States business groups and standards organizations for the development of international standards of practice; and maintenance of a clearinghouse for the collection and dissemination of scientific, technical, and engineering information. The scope of the Bureau's activities is suggested in the following listing of its four Institutes and their organizational units.

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* NBS Group, Joint Institute for Laboratory Astrophysics at the University of Colorado.
** Located at Boulder, Colorado.

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This project was authorized for the period September 1, 1964 to August 31, 1965 by National Aeronautics and Space Administration Purchase Order No. R-14, Amendment No. 4 received December 29, 1964. The most recent project status report was submitted to the National Aeronautics and Space Administration in NBS Report 8599 dated December 30, 1964.

During this reporting period, a full report on the effect of humidity on the fatigue life of 4340 steel, magnesium alloy AZ61A, composition 22 brass, and titanium Ti-4Al-4Mn was completed and submitted to NASA. The report also covered the effects of a dodecyl alcohol coating on the fatigue properties of the steel and magnesium alloys.

Some equipment has been readied and other equipment and instrumentation has been ordered for conducting fatigue tests on Ti-4Al-4Mn and 4340 steel under conditions of very low humidity and in inert atmospheres.

Specimens of the titanium alloy have been produced and are being polished for testing. Steel specimens have been ordered.

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